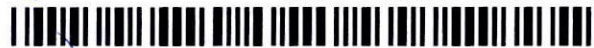




Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

647.1701
Job Sheet 175238-A



Part No: 647.1701

Job Qty: 3 ea

Part Name: Skid Deflector Assembly



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 4/6/18

Job Tracking No:

Due Date: 4/13/18

Created By: Linda Lacelle

Type: SOLD

Description:

Note: DWG REV E IPP REV:A 12.10.04 NEW ISSUE DD VERF:JFS IPP REV:B 18.03.01 REVISE BOM AS PER
DWG DD VERF:DP

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
110	Packaging	3 pcs		4/12/18	0.00	0.00	Packaging1-1		
120	Small Fab	3 pcs		4/12/18	0.00	1.23	Small Fab-1		
130	QC	3 pcs		4/12/18	0.00	0.00	QC5		
190	Small Fab	3 pcs		4/13/18	0.00	1.23	Small Fab-1		
200	QC	3 pcs		4/13/18	0.00	0.00	QC5		
210	Packaging	3 pcs		4/13/18	0.00	0.00	Packaging3-1		
220	QC21-SA	3 Ea		4/13/18	0.00	0.00	QC21		

Part Op 120 - 1- Assemble item 4,6,7 and 8 as per dwg. 2- Clamp item 1 and 2 to item 3. Transfer drill holes as per dwg see note
Descriptions: 6. Use clecos. 3- Disassemble parts 4- Deburr 5- Touch up expose aluminum with alodine 6- Re-assemble as per dwg ***

***TOUCH UP RIVET WITH PRIMER *** PRIMER BATCH: ***

190 - ASSEMBLE AS PER DWG

210 - ***IDENTIFY AS PER APICAL MPP-120 BY STAMPING P# AND REV***

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
647.1711	Plate	3 Ea (1 ea)	120-Small Fab	

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
120-Small Fab	647.1711	3	0	0

Part Specifications

Specifications could not be found.

QA Closed: Date:

Work Order update only

Work Order: _____		DISPOSITION		AGAINST DEPARTMENT/PROCESS							
Part No. _____				Skid-tube		Cross tube		Water Jet		Engineering	
NCR No. _____		Susper		Machining		Small Fab		Prod. Eng. Coord.		Quality	
				Thermoforming		Finishing		Rec/Store/Packaging		Other	
				Large Fab		Composite		Supplier			
Date :	Step #:	QTY Effective :							MRB (QSI042) Approval		
Description Work Order		Disposition							Completed By		
									Lead hand / Supervisor Approval Verification		
									QC / QA Coordinator Approval		

Job Date: 04/06/18
Job No.: 175238-A

Mfg Date: 04/06/18
Job No.: 175238-A

Packaging
647-1701
Serial No/Batch: S058544

Change No:
Operation:
Revision:
PART NO:
Serial No/Batch: S058544

Container No: S058658
Skid Deflector Assembly
AEROSPACE

DART Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
TEL: 1 613 632-5200
Email: sales@dartero.com
www.darterospace.com

Root Cause

Environment	No Re-verification	Pre-
Design	Operator	Bending
Doc/Data	Offset/Setup	Centre Not C
Equip/Tooling	Supplier	Cracks
Handling/Pre	Training	Crimp/Kink/Ripple/W
Material	Use for Testing	Cuffs
Internal Transport	Poor Information	Crushing
Tribal Knowledge	Rushing	Heat Treat
LOA	Product Improvement	Wave/Twist in Tube
Substation	Process Improvement	Marks/Chatter
Past Expiry Date	Manufacturing Process	
Misidentified	Past Due	OTHER :

	Positioned Wrong
	Outside Dimensions
	Over/Under tolerance
	Part Incorrect
	Part Lost/Missing
	Part Moved
	Drawing
	Finish
	Misread
	Turning Sequence



Dart Aerospace Ltd.
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Hawkesbury, ON
K6A 1K7
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Tel (613) 632-5200

*MUST SHIP
APRIL 13*

647.1701
Job Sheet 175238



Part No: 647.1701

Job Qty: *4* ea

Part Name: Skid Deflector Assembly



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 3/29/18

Job Tracking No:

Due Date: 4/13/18

Created By: Linda Lacelle

Type: SOLD

Description:

Note: DWG REV E IPP REV:A 12.10.04 NEW ISSUE DD VERF:JFS IPP REV:B 18.03.01 REVISE BOM AS PER DWG DD VERF:DP

Ship Via:

order 4752

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	4 Ea		4/12/18	0.00	0.00	Start Up Stores/Pkg-1		
110	Packaging	4 pcs		4/12/18	0.00	0.00	Packaging1-1		
120	Small Fab	4 pcs		4/12/18	0.00	1.64	Small Fab-1		
130	QC	4 pcs		4/12/18	0.00	0.00	QC5		
190	Small Fab	4 pcs		4/13/18	0.00	1.64	Small Fab-1		
200	QC	4 pcs		4/13/18	0.00	0.00	QC5		
210	Packaging	4 pcs		4/13/18	0.00	0.00	Packaging3-1		
220	QC21-SA	4 Ea		4/13/18	0.00	0.00	QC21		

Part Op 120 - 1- Assemble item 4,6,7 and 8 as per dwg. 2- Clamp item 1 and 2 to item 3. Transfer drill holes as per dwg see note
Descriptions: 6. Use clecos. 3- Disassemble parts 4- Deburr 5- Touch up expose aluminum with alodine 6- Re-assemble as per dwg ***

***TOUCH UP RIVET WITH PRIMER *** PRIMER BATCH: _____ ***

190 - ASSEMBLE AS PER DWG

210 - ***IDENTIFY AS PER APICAL MPP-120 BY STAMPING P# AND REV***

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
601.1915	Rivet (CR3213-4-4)	88 (22 ea)	90-Start up Operation	
647.1712	Gusset	4 Ea (1 ea)	90-Start up Operation	
647.1710	Plate	4 Ea (1 ea)	90-Start up Operation	<i>161728</i>
647.1711	Plate	4 Ea (1 ea)	90-Start up Operation	
601.1607	Washer, Cad Only Required	8 pcs (2 ea)	190-Small Fab	
601.1622	Screw	4 (1 ea)	190-Small Fab	
647.1713	Spacer	4 Ea (1 ea)	190-Small Fab	
MS21042-3	Nut	4 Ea (1 ea)	190-Small Fab	<i>0027548</i>

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : _____					

Job Allocations				
Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	601.1915 CR3213-44	88	0	0
	647.1710	4	11	0
	647.1711	4	7	0
	647.1712	4	13	0
190-Small Fab	601.1607 NASH49F0332P	8	1	0
	601.1622 MS27039-1-18	4	0	0
	647.1713	4	24	0
	MS21042-3	4	266	0
Part Specifications				
Specifications could not be found.				

Plex 3/29/18 12:47 PM dart.lacelle.linda

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

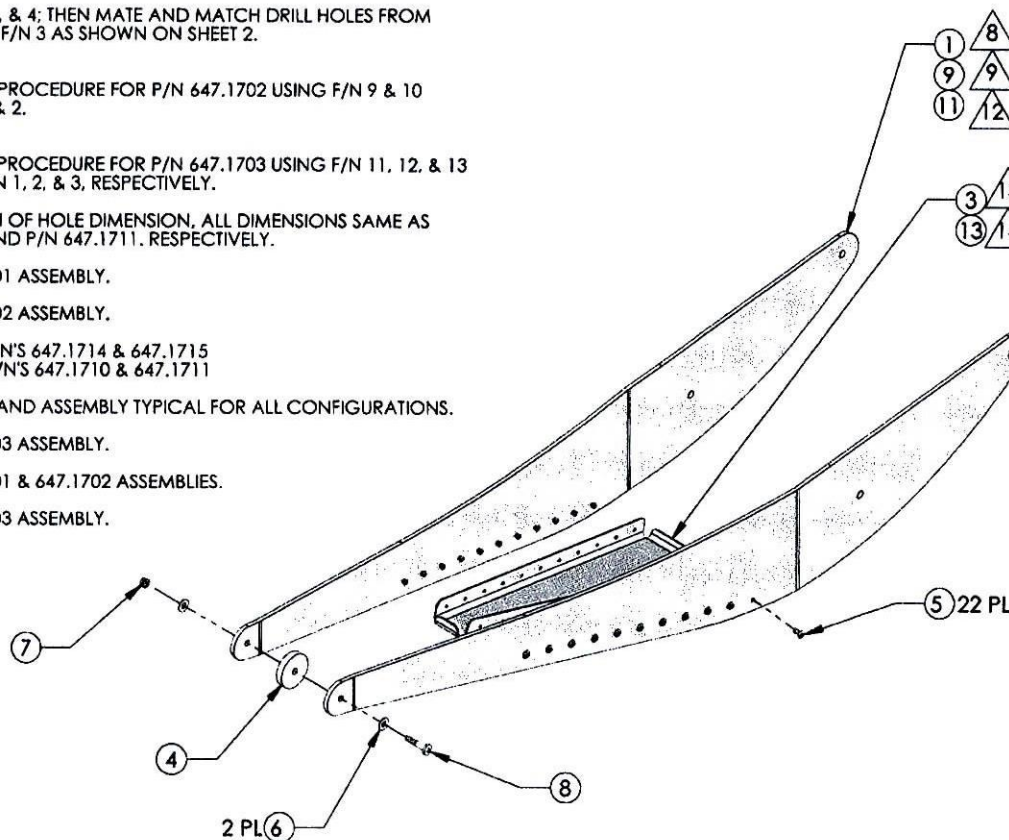
Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER : _____					

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NOTES:

- 1 MATERIAL: 7075-T6 ALUMINUM PER AMS-QQ-A-250/12.
- 2 MATERIAL: 6061-T6 ALUMINUM BAR IAW AMS-QQ-A-250/11.
- 3 FINISH IAW MPP-172, SECTIONS 2.1, 3.1, & 4.2.
- 4 DEBURR AND BREAK ALL SHARP EDGES.
- 5 IDENTIFY IAW MPP-120.
- 6 P/N 647.1701:
CLAMP F/N 1, 2, & 4; THEN MATE AND MATCH DRILL HOLES FROM F/N 1 & 2 ONTO F/N 3 AS SHOWN ON SHEET 2.
- P/N 647.1702:
FOLLOW SAME PROCEDURE FOR P/N 647.1702 USING F/N 9 & 10 IN PLACE OF 1 & 2.
- P/N 647.1703:
FOLLOW SAME PROCEDURE FOR P/N 647.1703 USING F/N 11, 12, & 13 IN PLACE OF F/N 1, 2, & 3, RESPECTIVELY.
- 7 WITH EXCEPTION OF HOLE DIMENSION, ALL DIMENSIONS SAME AS P/N 647.1710 AND P/N 647.1711, RESPECTIVELY.
- 8 FOR P/N 647.1701 ASSEMBLY.
- 9 FOR P/N 647.1702 ASSEMBLY.
- 10 .323" DIA FOR P/N'S 647.1714 & 647.1715
.257" DIA FOR P/N'S 647.1710 & 647.1711
- 11 RIVET SPACING AND ASSEMBLY TYPICAL FOR ALL CONFIGURATIONS.
- 12 FOR P/N 647.1703 ASSEMBLY.
- 13 FOR P/N 647.1701 & 647.1702 ASSEMBLIES.
- 14 FOR P/N 647.1703 ASSEMBLY.



REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
	LAST PROTOTYPE REVISION: P82		N/C
N/C	INITIAL RELEASE	08/05/09	P. BRAVO
A	INCORPORATED ECN'S 02937 & 03921	06/07/13	P. BRAVO
B	INCORPORATED ECN 03970	07/03/13	P. BRAVO
C	INCORPORATED ECN 04058	08/14/13	P. BRAVO
D	INCORPORATED ECN'S 04679, 04702 & 04964	05/29/15	P. BRAVO
E	INCORPORATED ECN 03357	03/21/16	P. BRAVO

QTY	FIND #	PART #	DESCRIPTION	MAT'L	SPEC.
1		13	647.1718 GUSSET	△	△
1		12	647.1717 PLATE	△	△
1		11	647.1716 PLATE	△	△
1		10	647.1715 PLATE	△	△
1		9	647.1714 PLATE	△	△
1	1	8	601.1622 SCREW	MS27039-1-14	
1	1	7	601.2943 LOCKNUT	MS21042-3	
2	2	6	601.1607 WASHER	NAS1149F0332P	
22	22	5	601.1915 RIVET	CR3213-4-4	
1	1	4	647.1713 SPACER	△	△
1	1	3	647.1712 GUSSET	△	△
1		2	647.1711 PLATE	△	△
1		1	647.1710 PLATE	△	△
X			647.1703 SKID DEFLECTOR ASSY		
X			647.1702 SKID DEFLECTOR ASSY		
	X		647.1701 SKID DEFLECTOR ASSY		

NEXT ASSY (S)		ORIGINAL DATE		DRAFTING APPROVAL		CONTRACT NO.		UNLESS OTHERWISE SPECIFIED		SCALE		SHEET	
647.1300		08/05/09		P. BRAVO				DIMENSIONS ARE IN INCHES		07M26		647.1700	E
								TOLERANCES ARE:					
								2 PLACE DECIMALS ±.01					
								3 PLACE DECIMALS ±.005					
								ANGLES ±.5°					

DART 3030 ENTERPRISE CT., SUITE A
AEROSPACE VISTA, CA 92081
APICAL INDUSTRIES INC. (760) 724-5300
DBA DART AEROSPACE

SKID DEFLECTOR ASSY

SCALE NONE SHEET 1 OF 7

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐
Past Expiry Date ☐	Manufacturing Process ☐	OTHER :			
Misidentified ☐	Past Due ☐				